

IMPACT OF CLIMATE CHANGE ON PADDY FARMER'S LIVELIHOOD SECURITY IN ERODE AND TIRUCHIRAPALLI DISTRICTS OF TAMIL NADU

J.YOGANARASIMHULU NAIDU & P. SIVARAJ

Ph.D., Scholars, Department of Agricultural Extension and Rural Sociology, TNAU, Coimbatore, India

ABSTRACT

Climate change implies both direct and indirect impact on the general well-being of the people in the rural community where agriculture and allied sectors are the main sources for their livelihood security. A study was conducted among small and marginal paddy farmers of Tamil Nadu. A sample size of 200 paddy farmers was selected from the districts of Erode and Tiruchirappalli, Tamil Nadu. Results reviewed that, the activities such as cow rearing and goat rearing found to be mostly contributing to the income share of the farmers. The purchase of two-wheelers, electronic items like television, refrigerator, washing machine, mobile and purchase of four wheelers were found to have major impact on livelihood of farmers in this study area

KEYWORDS: Paddy Farmers, Climate Change, Impacts, Livelihood Security

INTRODUCTION

The causes and effects of climate change have led to social, economical, environmental and political debates. Agriculture is the riskiest profession in the world, since natural factors like temperature, precipitation, hail and thunder storms, and pest epidemics influence crop yield and thereby the economic fate of the farmers. IPCC (2007) has projected that global mean annual surface air temperature increase by the end of this century is likely to be in the range of 1.8 to 4.0°C. World Bank (2008) refers climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. Climate change is affecting agricultural regions throughout the world. It has been estimated that the overall economic impact on agriculture could be up to 10 percent of GDP.

India is a large country with 15 agro-climatic zones, with diverse seasons, crops and farming systems. For a majority of people in India, to this day, agriculture is the main stay of livelihood. Agriculture is the most vulnerable sector to climate change as it is inherently sensitive to climate variability and climate change is going to impact on Indian agriculture in different ways both directly and indirectly. Agriculture is inherently sensitive to climate conditions and is the most vulnerable sector to the risks and impacts of climate change (Sagun, 2009). Climate change is the long term conspicuous deviation from usual prevailing climate bringing variations in normal temperature, rainfall and atmospheric parameters. There is an urgent need to understand the effects of climate change on agricultural sector both at global and as well as at regional levels, especially from the point of view of providing food to vulnerable section of the population. Developing countries are more vulnerable to climate change than developed countries because of the predominance of agriculture in their economies and scarcity of capital for adaptation measures (Fischer, 2005). Sinha and Swaminathan (1991) have showed that an increase of 2°C in temperature would decrease rice yield by about 0.75 ton/ha. In this regard climate change impact especially among the small and marginal paddy farmers with limited resources is of great concern.

The study was conducted in the Vaiyampatty block of Tiruchirapalli district (Ponnaniyar basin) and Erode block of Erode district (Kalingarayan basin) in Tamil Nadu. It was selected based on the water availability for farming situation. Seven villages in Ponnaniyar basin and eleven villages in Kalingarayan basins were selected for the study.

RESEARCH METHODOLOGY

Paddy is the staple food crop of Tamil Nadu and is heavily exposed to the extreme and extraneous events of climate change. Erode and Tiruchirapalli districts were purposively selected for the study as the district has high range of variability in both rainfall and temperature. Kalingarayan (Erode) and Ponnaniyar (Tiruchirapalli) basins were then chosen as they have maximum acreage under paddy with majority of the farmers being small (2.5 to 5 acres) and marginal (< 2.5 acres). Canal irrigation was also found to be prominent in these basins resulting in farmers becoming more vulnerable to climate change events. Based on the discussions with the officials and subject matter specialists of the agricultural department one block was selected from each basin. For the selection of villages, an inventory of revenue villages in each block was collected. Then ten villages from each block were randomly chosen. The total sample size was 200 with randomly selecting 100 paddy farmers (comprising 50 male farmers and 50 female farmers) from each of the blocks.

FINDINGS AND DISCUSSIONS

1. Diversification Components

Table 1 reveals that in Kalingarayan basin the diversification components which are contributing more income share to the total number of mandays were cow rearing (66.00 %) and goat rearing (23.00 %). Whereas in Ponnaniyar basin 79.00 per cent of farmers had cow rearing and 28.00 per cent were involved in goat rearing. Compared to Kalingarayan basin majority of the farmers of Ponnaniyar basin had low income and insufficient water for crop cultivation. This might be the reason for them to go for cow and goat rearing. Moreover free distribution of the cow and goat to the privileged farmers by the Government of Tamil Nadu might be another reason.

Table 1: Distribution of the Respondents Based on Their Diversification Components(n = 200)

S.No.	Diversification Components	Kalingarayan BasinN= 100		Ponnaniyar BasinN= 100	
		Number	Per Cent	Number	Per Cent
1.	Cow rearing	66	66.00	79	79.00
2.	Goat rearing	23	23.00	28	28.00

(Multiple response *)

2. Purchase Behaviour

Purchase behaviour of the respondents refers to their behaviour in buying consumer durables, vehicles and household utilities with the help of income obtained from the diversification of activities. Table 2 indicates that majority of the farmers (92.00 %) purchased electronic items followed by two-wheelers (58.00%) and purchase of four wheelers (12.00 %) in Kalingarayan basin farmers. Whereas in Ponnaniyar basin majority of farmers purchased electronic items (97.00 %) followed by two-wheelers (39.00 %) and four wheelers (3.00 %). This may confirm that farmers in both basins preferred to have electronic goods as their prior livelihood needs and purchasing of four wheeler is considered as esteem need.

Table 2: Distribution of the Respondents Based on Their Purchase Behavior(n = 200)

S.No.	Purchase Behavior	Kalingarayan BasinN= 100		PonnaniyaruBasinN= 100	
		Number	Per Cent	Number	Per Cent
1	Two wheelers	58	58.00	39	39.00
2	Electronic items	92	92.00	97	97.00
3	Four wheelers	12	12.00	3	3.00

(Multiple response *)

3. Investment Behaviour

The investment behaviour refers to the pattern of utilization of money earned from diversified activities for further development on agriculture and allied sectors in their own farm and saving money for future use.

Table 3: Distribution of the Respondents According to Their Investment Behavior. (n = 200)

S.No.	Investment Behaviour	Kalingarayan Basin N= 100		Ponnaniyaru Basin N= 100	
		Number	Per Cent	Number	Per Cent
1.	Purchase ofland	20	20.00	13	13.00
2.	Purchase ofshares	12	12.00	13	13.00
3.	Construction of house	36	36.00	38	38.00
4.	Renovation ofirrigation structures	25	25.00	19	19.00
5.	Strengthening ofbunds	22	22.00	7	7.00
6.	Land reclamation	13	13.00	7	7.00
7.	Starting new business/enterprise	3	3.00	4	4.00

(Multiple response *)

From Table 3, Kalingarayan basin farmers had spent their majority of investment in construction of house (36.00 %) followed by renovation of irrigation structures (25.00 %), strengthening of bunds (22.00 %), purchase ofland (20.00 %), land reclamation (13.00 %), purchase of share (12.00 %) and starting new business/enterprise (3.00 %), whereas, in Ponnaniyar basin the majority of the farmers invested in constructing house (38.00 %) followed by renovation in irrigation (19.00 %), bought land (13.00 %), bought share (13.00 %) strengthening bunds (7.00 %), land reclamation (7.00 %) and starting new business and enterprise (4.00 %).

4. Food Consumption Level of Small and Marginal Farmers

From Table 4, it could be inferred that the majority of the farmers in Kalingarayan basin had complete self sufficient food consumption level (80.00 %) followed by partially self sufficient food consumption level (20.00 %). Similarly most of the farmers had complete self sufficient food consumption level (77.00 %) followed by partially self sufficient food (23.00 %) in Ponnaniyar basin. The findings indicate that the food consumption level of the farmers in Kalingarayan and Ponnaniyar basin does not changed in significantly due to the impact of climate change.

Table 4: Distribution of the Respondents Based on Their Food Consumption Level

(n =200)

S.No.	Food Consumption Level	Kalingarayan Basin(N =100)		Ponnaniyar Basin (N =100)	
		Number	Per Cent	Number	Per Cent
1	Completely self sufficient	80	80.00	77	77.00
2	Partially self sufficient	20	20.00	23	23.00
	Total	100	100.00	100	100.00

CONCLUSIONS

Climate change and its effects are inevitable. The study on impact of climate change on Paddy farmer's livelihood security in Erode and Tiruchirapalli Districts of Tamil Nadu had comprehended that, the diversified activities like cow rearing and goat rearing found to be contributing more to the income share of the farmers apart from paddy cultivation in the prospect of climate change. The purchasing behavior of the farmers of the two basins implies that most of the farmers tend to purchase the basic goods for their livelihood security rather than purchasing luxurious needs. In the view of climate change farmers preferred to invest in construction of houses then followed by renovation of irrigation structures in both the basins. The farmers of the both basins had disclosed that they require complete self-sufficiency in food consumption level. The final outcome of the study deduced that when there is impact of climate change the farmers will always leans to livelihood security.

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